

CLAIMS

What is claimed is:

1. One or more computer readable media having a data structure stored thereon, said data structure comprising:

a general dimension containing members in a plurality of levels, said levels being organized according to a hierarchy in which descending levels in the hierarchy are defined by increasing specificity;

a summary cube containing the members of at least one upper level of the general dimension; and

a partitioned dimension containing a first subset of the members of at least one lower level of the general dimension, said lower level associated with the partitioned dimension being lower in the hierarchy than the upper level associated with the summary cube, said general dimension being partitioned based on a selected member of the upper level to form the partitioned dimension, said first subset of the members of the lower level corresponding to the selected member of the upper level.

2. The data structure of claim 1 further comprising a detail cube including the partitioned dimension and one or more sub-cubes containing aggregations of the first subset of the members of the lower level from the partitioned dimension.

3. The data structure of claim 2 wherein the detail cube comprises a first sub-cube for additive metrics and a second sub-cube for non-additive metrics.

4. The data structure of claim 3 wherein the first and second sub-cubes are combined to form a virtual cube.
5. The data structure of claim 3 wherein the additive metrics include page views.
6. The data structure of claim 3 wherein the non-additive metrics include unique user counts.
7. The data structure of claim 1 wherein the partitioned dimension contains the members of the upper level associated with the summary cube in addition to the first subset of the members of the lower level associated with the partitioned dimension.
8. The data structure of claim 1 further comprising another partitioned dimension containing a second subset of the members of the lower level, said general dimension being partitioned based on another selected member of the upper level to form the other partitioned dimension, said second subset of the members of the lower level corresponding to the other selected member of the upper level.
9. The data structure of claim 1 wherein the data structure is modeled according to a star dimensional model schema.
10. The data structure of claim 1 wherein the data structure is an OLAP database.

11. The data structure of claim 1 further comprising one or more shared dimensions.

12. The data structure of claim 1 wherein the general dimension contains at least about 500,000 members.

13. The data structure of claim 1 wherein the members of the general dimension represent Web usage information.

14. The data structure of claim 13 wherein the Web usage information is organized into two or more of the following levels: network, service, site, domain, directory, and page.

15. The data structure of claim 14 wherein the upper level associated with the summary cube comprises the service level and wherein the selected member represents a selected Web service.

16. The data structure of claim 15 wherein the partitioned dimension contains data representing directory information for the selected Web service.

17. The data structure of claim 15 wherein the partitioned dimension contains data representing page view information for the selected Web service.

18. A method of processing data in a multidimensional database comprising:

defining a plurality of dimensions, each dimension containing members of a plurality of levels, said levels being organized according to a hierarchy in which descending levels in the hierarchy are defined by increasing specificity;

partitioning at least one of the dimensions based on a selected member of an upper level of the dimension to be partitioned, said partitioned dimension containing a first subset of the members of at least one lower level of the dimension to be partitioned; and

defining a summary cube containing the members of an upper level of the partitioned dimension, said upper level associated with the summary cube being higher in the hierarchy than the lower level associated with the partitioned dimension.

19. The method of claim 18 further comprising defining a detail cube, said detail cube including the partitioned dimension and one or more sub-cubes containing aggregations of the first subset of the members of the lower level from the partitioned dimension.

20. The method of claim 19 further comprising combining the first and second sub-cubes to form a virtual cube.

21. The method of claim 19 wherein the detail cube comprises a first sub-cube for additive metrics and a second sub-cube for non-additive metrics.

22. The method of claim 21 wherein the additive metrics include page views.

23. The method of claim 21 wherein the non-additive metrics include unique user counts.

24. The method of claim 19 further comprising extracting information from the summary and detail cubes using an OLAP application.

25. The method of claim 19 further comprising implementing a workflow with an XML template to automatically create another partitioned dimension and another detail cube database, said other partitioned dimension containing a second subset of the members of the lower level of the dimension, said second subset of the members of the lower level being partitioned from the dimension based on another selected member of the upper level, said other detail cube including the other partitioned dimension component and one or more sub-cubes containing aggregations of the second subset of the members of the lower level from the other partitioned dimension.

26. The method of claim 25 wherein implementing a workflow with an XML template includes defining the other partitioned dimension based on a user-specified partition key and defining the other detail cube based on the user-specified partition key.

27. The method of claim 26 wherein the partition key is representative of the other selected member of the upper level.

28. The method of claim 27 wherein implementing a workflow with an XML template includes creating an XML metadata file for storing information to define the other partitioned dimension and the other detail cube, and further comprising reading the XML metadata file and

deploying OLAP objects for creating the other partitioned dimension and the other detail cube using a COM-based application.

29. The method of claim 19 wherein the partitioned dimension contains the members of the upper level associated with the summary cube in addition to the first subset of the members of the lower level associated with the partitioned dimension and wherein the detail cube and the summary cube have the same dimensionality.

30. The method of claim 29 further comprising implementing zoom in/zoom out events to navigate between information in the summary cube and information in the detail cube.

31. The method of claim 30 wherein the zoom in event comprises a drill through from the summary cube to the detail cube.

32. The method of claim 30 wherein the zoom out event comprises a roll up from the detail cube to the summary cube.

33. The method of claim 30 wherein implementing zoom in/zoom out events comprises configuring an XML metadata file to identify zoom in/zoom out events behavior.

34. The method of claim 18 wherein the partitioned dimension contains the members of the upper level associated with the summary cube in addition to the first subset of the members of the lower level associated with the partitioned dimension.

35. The method of claim 18 further comprising partitioning another dimension based on another selected member of the upper level, said other partitioned dimension containing a second subset of the members of the lower level corresponding to the other selected member of the upper level.

36. The method of claim 18 wherein defining the dimensions includes modeling the data in the multidimensional database according to a star dimensional model schema.

37. The method of claim 18 wherein the dimension to be partitioned contains at least about 500,000 members.

38. The method of claim 18 wherein the members of the dimension to be partitioned represent Web usage information.

39. The method of claim 38 wherein the Web usage information is organized into two or more of the following levels: network, service, site, domain, directory, and page.

40. The method of claim 39 wherein the upper level associated with the summary cube comprises the service level and wherein the selected member represents a selected Web service.

41. The method of claim 40 wherein the partitioned dimension contains data representing directory information for the selected Web service.

42. The method of claim 40 wherein the partitioned dimension contains data representing page view information for the selected Web service.

43. One or more computer-readable media having computer-executable instructions for performing the method of claim 18.

44. One or more computer-readable media having computer-executable components for processing data, said data being organized in a dimension containing members in a plurality of levels, said levels being organized according to a hierarchy in which descending levels in the hierarchy are defined by increasing specificity, said components comprising:

a summary cube database component storing the members of an upper level of the dimension;

a first partitioned dimension component containing a first subset of the members of at least one lower level of the dimension, said first subset of the members of the lower level being partitioned from the dimension based on a selected member of the upper level;

a first detail cube database component including the first partitioned dimension component and one or more sub-cubes containing aggregations of the first subset of the members of the lower level from the first partitioned dimension component; and

a template component for implementing a workflow to automatically create a second partitioned dimension component and a second detail cube database component, said second partitioned dimension component containing a second subset of the members of the lower level of the dimension, said second subset of the members of the lower level being partitioned from

the dimension based on another selected member of the upper level, said second detail cube database component including the second partitioned dimension component and one or more sub-cubes containing aggregations of the second subset of the members of the lower level from the second partitioned dimension component.

45. The computer-readable media of claim 44 wherein the template component includes a partition template for defining the second partitioned dimension component based on a user-specified partition key and a cube template for defining the second detail cube database component based on the user-specified partition key.

46. The computer-readable media of claim 45 wherein the partition key is representative of the other selected member of the upper level.

47. The computer-readable media of claim 45 wherein the workflow implemented by the template component creates a metadata file storing information for use in defining the second partitioned dimension component and the second detail cube database component, and further comprising a COM-based application for reading the metadata file and deploying OLAP objects for creating the second partitioned dimension component and the second detail cube database component.

48. One or more computer-readable media having computer-executable components for processing data, said data being organized in a dimension containing members in a plurality of

levels, said levels being organized according to a hierarchy in which descending levels in the hierarchy are defined by increasing specificity, said components comprising:

a summary cube database component storing the members of an upper level of the dimension;

a partitioned dimension component containing a subset of the members of at least one lower level of the dimension, said subset of the members of the lower level being partitioned from the dimension based on a selected member of the upper level, said partitioned dimension component further containing the members of the upper level associated with the summary cube database component;

a detail cube database component including the partitioned dimension component and one or more sub-cubes containing aggregations of the subset of the members of the lower level from the partitioned dimension component; said detail cube database component and said summary cube database component having the same dimensionality; and

a navigation component for implementing zoom in/zoom out events to navigate between information in the summary cube database component and information in the detail cube database component.

49. The computer readable media of claim 48 wherein the zoom in event comprises a drill through from the summary cube database component to the detail cube database component.

50. The computer readable media of claim 48 wherein the zoom out event comprises a roll up from the detail cube database component to the summary cube database component.

51. The computer readable media of claim 48 wherein the navigation component comprises a metadata file configured to identify zoom in/zoom out events behavior.

52. A method of performing clickstream analysis from Web usage data in a multidimensional database, said method comprising:

defining a target dimension, said target dimension containing members of a plurality of levels, said levels including a service level containing members representative of a plurality of Web services, said levels being organized according to a hierarchy in which descending levels in the hierarchy are defined by increasing specificity;

partitioning the target dimension based on a selected member of the service level, said partitioned dimension containing a first subset of the members of at least one level of the target dimension lower in the hierarchy than the service level; and

defining a summary cube containing the members of the service level of the target dimension.

53. The method of claim 52 further comprising defining a detail cube, said detail cube including the partitioned dimension and one or more sub-cubes containing aggregations of the first subset of the members of the lower level from the partitioned dimension.

54. The method of claim 53 wherein the detail cube comprises a first sub-cube for page views and a second sub-cube for unique user counts.

55. The method of claim 53 further comprising combining the sub-cubes to form a virtual cube.

56. The method of claim 53 further comprising extracting clickstream information from the summary and detail cubes using an OLAP application.

57. The method of claim 52 wherein the partitioned dimension contains the members of the upper level associated with the summary cube in addition to the first subset of the members of the lower level associated with the partitioned dimension.

58. The method of claim 52 wherein the target dimension has two or more of the following levels of Web usage information: network, service, site, domain, directory, and page.

59. The method of claim 52 wherein the partitioned dimension contains data representing directory information for the Web service represented by the selected member of the service level.

60. The method of claim 52 wherein the partitioned dimension contains data representing page view information for the Web service represented by the selected member of the service level.